Factors influencing the utilization of research findings by health policy-makers in a developing country: a case study of Mali's essential medicines list

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For Dodie (1915 – 1997)

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ABSTRACT

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INTRODUCTION & BACKGROUND – Research findings are increasingly recognized as an important input in the formation of health policy. There is concern that research findings are not being utilized by health policy-makers to the extent that they could be. Several models of policy processes and research utilization have been proposed in the literature, indicating the many ways research can influence policy-making. The factors influencing this utilization are emerging in the literature, including but not limited to: the interaction between researchers and policy-makers, and the relevance and timeliness of research findings. Most of this research has come from Western societies and there is still little known about this issue in developing countries. The object of this study was to determine these factors by exploring the policy-making involved in implementing Mali's essential medicines list, a health policy common in developing countries

METHODS – Many methods have been used in this field of research, largely dominated by the qualitative tradition. A case study of the selection and updating of Mali's essential medicines list was undertaken using a phenomenological approach to the analysis. In-depth, semi-structured interviews and a natural group discussion were held with national policy-makers, most specifically members of the national commission that selects and updates the country's list. A document analysis was also performed.

RESULTS – Factors emerging from the textual data that appear to be influencing the utilization of health research findings for these policy-makers include: access to information, relevance of the research, utilization of research perceived as a time consuming process, trust in the research, authority of those who presented their view, competency in research methods, priority or relative importance of research in the policy process, and accountability.

CONCLUSION – Improving the transfer of research to policy will require efforts from researchers, policy-makers, and third parties. Through collaboration between researchers and policy-makers, increased production and dissemination of relevant and useful research, and continued and improved technical support from networks and multi-national organizations, policy-makers from developing countries will be better equipped to make informed decisions concerning their health policy issues.

CHAPTER I – INTRODUCTION

"If we, as health workers, or teachers, or students, or civil servants do not feel that we, and the groups or organizations we belong to, have some power to alter policy that affects our lives, or the lives of those around us, why get up in the morning?"

- *Gill Walt* (1)

Research utilization in health policy-making

Many health researchers and those who fund health research would agree with Walt's statement regarding their desire to influence policy. The health research community would like to believe that the work they produce and support is influencing practice and policy and consequently leading to actual improvements in health care delivery. Despite the neutral and objective standpoint usually taken in their work, the research community considers the results they produce to be important. Probably the single most common recommendation in all published articles in all academic journals is for more research. Health research funding agencies distribute massive amounts of financial resources every year to support researchers and research institutions. Clearly, the health research community perceives a great need for this information.

The concept of evidence-based medicine was first introduced in 1991 as an approach to teaching medical practice, promoting the utilization of empirical research findings by clinical practitioners (2). This concept has been extended to policy as well. The extent to which research actually influences the health policy process is however unclear (3). Various models of policy processes have emerged in this field demonstrating that there are many ways in which research can influence policy (1, 4). Research findings are only one of the many types of information required for good policy-making. Other concerns such as local resources, values and needs also come into the policy process.

Research findings are however increasingly being recognized as critical inputs in health planning and policy-formation and most would agree that their role is crucial to developing sound health policies. Still, it is widely recognized that the level of research utilization by policy-makers is lower than it could be (3). Recognition of the importance of bridging the “know-do” gap is increasing around the world and has resulted in an emergence of various institutions involved in analyzing this problem and promoting the transfer of knowledge to practice and policy (5).

Studying research to policy

The study of research’s influence on policy has had a long and rich background and continues to grow. Early work in this field focused on the utilization of social science knowledge in government and public policy and discussed the general lack of utilization of this information source (6, 7). The field expanded and advanced to study the usefulness and utilization of various types of research findings in policy-making, with many studies focused on health research including health technology assessments and economical evaluations (see for example: (8, 9)). Within the field of evidence-based medicine, there have been discussions on what constitutes the best type of evidence (10), discussing key differences between basic and applied research. More recently, there have been hierarchies of evidence discussed, with systematic reviews ranked at the top (11), and described as “the heart of evidence-based practice” in various medical fields such as nursing (12). These concepts have also been applied to policy-making. Some studies have focused on the factors influencing the utilization of systematic reviews by public health decision-makers (13, 14), and more recently how to improve the usefulness of these reviews for health managers and policy-makers (15).

While the body of literature examining the factors influencing the utilization of research findings by policy-makers is increasing in depth and scope, most of the findings from this field are based on studies from industrialized countries, and

there is still relatively little known about these factors in developing countries (16). There is therefore a great need for more studies in this field in these economically strained settings. Policy-makers from these countries need the best information from all sources in order to make well-informed decisions. With their limited resources these countries have much to gain from well-informed health policies (17).

The research presented here identified factors influencing the utilization of research findings by health policy-makers in a developing country. This study did this by exploring Malian policy-makers' perceptions of the utilization of research findings for decisions made during the implementation of a health policy common in developing countries: the selection and updating of the national essential medicines list (EML).

Objectives

The research study presented here began with the following aim and specific objectives:

Aim

To improve the transfer of information from research to policy, increasing informed decision-making by health policy-makers in developing countries, by identifying the factors influencing the utilization of such information.

Specific objectives

1. Identify key decision-makers and key information providers involved in the selection and updating processes for Mali's EML.
2. Explore and map out the information transfer process and networking involved in the selection and update of Mali's EML.
3. Explore the decision-making process involved in the selection and updating Mali's EML.

4. Identify policy-makers' perceptions of the utilization of research findings in the decision-making process, the importance of research findings in the process in general, and specific aspects of different research findings that make them useful.
5. Identify to what extent research findings were actually utilized in the selection process, examples of research used, and the kind of utilization (enlightenment, confirming beliefs, weapons for support, etc.).
6. Report the findings at national and international levels in both French and English languages. Also, publish the findings in a relevant peer-reviewed journal for further dissemination.

Thesis layout

The research on which this thesis is based was written up in a research article that was submitted for publication in an international peer-reviewed scientific journal on May 22, 2006. The article is found in Chapter IV. The research article is the primary component of this thesis, however an elaboration on several important concepts and ideas are presented here in order to reflect on issues that could not be included in the article. The author has attempted to minimize repetition.

Having laid out the rationale and objectives for the present study in this introductory chapter, the thesis will next provide the background into some of the specific issues and concepts that are important to this study in Chapter II. It will give an overview of the particular policy that was analyzed in this study – an EML – and some of the contextual factors of the setting in which it was studied – Mali. The chapter will then highlight some of the important models and theories of policy processes and research utilization in policy-making that can be found in the literature. The chapter will also provide an overview of past research findings on this particular topic.

The third chapter will review the methodologies that are important to this general field of research and those that have been used in the past, highlighting the strengths and weaknesses of the various methods for this particular research topic. An overview of issues related to the use of a qualitative design will also be included, since this field of research is largely dominated by the qualitative discipline. The chapter will then briefly discuss the design and methodology used in the present study, and the use of the phenomenological approach for analyzing the data.

The research article is then provided in Chapter IV. Lastly, Chapter V will elaborate and discuss issues that could not be covered in the article, due to the limits required from a scientific journal. This will include a description of the diversions from the protocol, a brief look at the factors that emerged from this study that are unique in the literature, some additional implications of the findings, and finally some concluding remarks.

CHAPTER II – BACKGROUND

Essential medicines lists

In 1975 the World Health Organization (WHO) introduced the global concept of essential medicines with the first model essential drug list introduced in 1977. The name was later changed to an essential medicines list (EML) to reflect the fact that the term medicine is commonly used in clinical practice to describe pharmaceutical preparations, whereas the term drug can often be confused with illicit or recreational drugs. Updates every two years have lead to the current 14th model list (18). According to the WHO, essential medicines are "those that satisfy the priority health care needs of the population", and are intended to be "available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality, and at a price the individual and the community can afford" (19).

Introducing an EML along with a national medicines policy is widely accepted as an effective way of improving the access to, and supply of medicines, lowering their costs, and improving rational use. There is relatively little information on the effectiveness of this policy in improving rational use in developing countries (20). That stated, this research was not an attempt to legitimize, argue against, or even question the use of an EML. Instead, this research took for granted that an EML was present in the case studied and focused on the selection and updating of the specific medicines on the list and the process that was experienced by the national health policy-makers in making these decisions.

The WHO model list is the reference document usually used as a starting point for a country's national list, however the selection decisions for each list require additional information from monitoring and research in order to appreciate the country's specific health situation (21). Key textbooks, such as Managing Drug Supply – often considered the expert text or "yellow bible" in this field – describe

the various criteria used for choosing medicines for the list (21, 22). These include: relevance to the pattern of prevalent diseases, proven efficacy & safety, adequate scientific data and evidence of performance in a variety of settings, adequate quality, favourable cost-benefit ratio, desirable pharmacokinetic properties, possibilities for local manufacture, and availability as single compounds. The extent to which a national selection committee makes informed decisions on which medicines to be included will no doubt play an important role in the success of this medicines policy.

Study setting

This study was conducted in the landlocked West African country of Mali. The French colonized the region in the late 19th century and brought with them the country's current official language. Most individuals' native tongue is however of local dialect, such as Bambara in the capital region of Bamako. With a GDP of 4.9 billion dollars and a population of 13.1 million, Mali is one of the poorest countries in the world. The economy is primarily based on agriculture, and there is a literacy rate of 19%. A few key health indicators include a life expectancy of 48.3 years, a child mortality rate of 21.9%, and an HIV prevalence of 1.9% (23). The total expenditure on health is 4.5% of GDP, with private expenditure accounting for 49.2% of total expenditure (24).

Like many developing countries, Mali has an EML. The Malian list is composed of 271 molecules and 426 medicines of different forms and dosages for a global list (25). Four separate lists are provided for community based health centers (with and without a medical doctor), district health centers and hospitals. Several of the medicines on Mali's EML are not present on the WHO model list. The country's EML also includes an extra section for "improved traditional medicines." It is one of very few countries with traditional medicines incorporated into its national list and is the location of a WHO collaborating centre for Traditional Medicines. The various additional medicines on the EML provided an excellent

opportunity for discussing specific decisions that might have been influenced by research findings.

The country's EML is updated approximately every two years by a national commission organized by the Direction of Pharmaceuticals and Medicines of the Ministry of Health. The commission is composed of various civil servants within the Ministry, including pharmacists, managers and directors of various health programs and institutes such as those fighting malaria, tuberculosis and HIV/AIDS. The commission also includes local medical practitioners and health workers considered experts in their field. Technical advisors of the WHO and the European Union also participate in this process. The country's official criteria for the selection of medicines is similar to those described above and, at the time of the study, specifically highlighted: harmlessness, efficacy, relevance to the disease pattern, availability on the international market, and cost-effectiveness (26). Since research findings potentially have much to contribute to these criteria, the factors influencing their utilization throughout the process of selecting the medicines for the EML, as perceived by policy-makers, were examined.

Theoretical issues

Policy-making is diverse and complex and there are many ways in which research findings may be utilized in this process. Various actors are involved and a vast number of information sources can be utilized, all potentially influencing the policy at different stages in its development. A number of models and theories have emerged in the literature attempting to explain and clarify the policy process and the influences that act within it, including the influence of health research findings. A comprehensive analysis of all these models and theories would be impossible (and unwarranted) in the limitations of a Masters thesis, especially one with a large field-study component. In addition, this research did not attempt to test any of these models or theories. However, an examination of these theoretical concepts is useful for obtaining a complete understanding of the present research and the issues that are essential to it.

The policy-making process

In the literature examining the utilization of research findings in the policy process, the terms “decision-makers” and “policy-makers” are often used interchangeably. Decision-making can be referred to as a specific choice among several options whereas policy-making often refers to a group of decisions and how these decisions are put into practice (27). The term decision-making has also been used to describe decisions made by patients and practitioners in their utilization or delivery of various treatments, including issues related to evidence-based medicine at the practice level – which could be referred to as practice policies. In this study, the term “policy-maker” has been adopted as a way of distinguishing individuals who make decisions – be it a single decision or several – that affect a policy, more specifically a service-related policy, from other health workers that make health decisions outside this policy arena.

The policy process has long been described as composing of several phases or stages: agenda setting, policy formulation, implementation, and evaluation. Agenda setting involves policy-makers’ identification and focus on a particular problem. Policy-formulation is the phase where policies are initiated and potentially adopted. The implementation phase involves the execution of the policy through various government institutions. The final phase is evaluation and is increasingly recognized as an important part of the policy process. It can in itself be considered a type of research that aims to determine the success of the policy. The evaluation then potentially influences previous stages in the policy process. Many models in the literature use similar classifications, often breaking down the policy process into even more phases (28).

Such “phases” models have been commonly used as frameworks when discussing the many areas where the various inputs (including health research findings) may be exerting their influence on policy-making. These phases have been described as acting in a linear sequence of events in the more top-down

rational models of policy processes. It is widely recognized that policy-making does not follow such a direct and linear process, and it has been argued that rational models can be misleading, resulting in an undue focus on higher levels of policy-decisions (29). For example, when considered from such a top-down point of view, the implementation phase would be considered as an administrative phase involving the simple carrying out of decisions made from above. According to a bottom-up approach – one that looks at the policy-process in a less linear and more interactive manner where actors in all phases of the policy process influence the development of the policy – the implementers play an important role in influencing the policy-making (1). Interactive models have been proposed in more bottom-up processes, where feedback mechanisms allow different phases to influence each other (30).

There is widespread belief that these phases are in fact not distinct from one another. In an in-depth look at process and power in health policy, Walt highlights the complexity of the policy process stating that implementation of the policy cannot be separated from its formulation (1). Still, the structure of her book is essentially divided into these distinct phases. Indeed, it can prove helpful to break up the policy process in such a way in order to discuss the impact of various sources of information on the process. In looking at the present case of an EML policy, the agenda setting phase might be considered the stage where it was decided that supply, rational use, and costs of medicines should be improved. Looking at how research findings influenced such a decision would constitute an examination of research's influence on the agenda setting phase. If one were to explore the decision made to use an EML, perhaps as a way of solving the problem of rational use, it could be considered as studying the formulation stage of the policy process. A study looking at the evaluation phase might constitute research measuring the impact of the essential medicines policy on rational use. Looking at whether or not such a study was used, would bring us back to one of the previous phases. Since the present study explored the utilization of research findings by policy-makers throughout their decisions

surrounding some of the details of the EML policy – the selection of the medicines for the list – it could be stated that this particular study focused on research findings' influence on the implementation stage of the policy process.

Other models described in this field include, the incrementalist models, pioneered by Lindblom, which describe policy-making as a series of many steps that lead to major changes and highlight the importance of the multitude of information sources and actors influencing policy-makers, including local needs and values (31). Network approaches similarly highlight the various actors influencing policy, focusing on the networks that exist within the particular policy-making community (3). Kingdon's multiple streams approach on the other hand describes policy-making in terms of the flow of politics, problems, and solutions (32). Issues of timing and relevance are key in this model since instances where these streams converge offer opportunities for influencing the policy.

Many other models have been proposed in the literature, and this is by no means an exhaustive list. The models help to shed light on the complexity of policy-making and highlight the fact that no specific model will be able to fully describe the development of every policy. As one health policy analyst states, the process is "best understood as a chaos of purposes and accidents" (29). The policy process can be thought to involve many phases, that are likely not distinctly separate from each other and do not flow in a linear fashion. In this process there are many influences coming from various actors, experiences and networks that may exert different levels of influence depending on the contextual setting and the links that have been established by the policy-makers. Additionally, the information provided by these influences may not always be available to policy-makers, and may only enter into the policy process under particular circumstances.

These models of policy processes offer several approaches to looking at where, and in what ways, various information sources may fit into the policy-making

process. In order to better comprehend how research findings can exert their influence on these complex policy processes, it is useful to analyze the various models and theories of research utilization that have emerged in the literature.

Research utilization

The term “research utilization” is in itself a complex concept with many different meanings. Perhaps the first to fully conceptualize the term was Weiss who categorized the concept into six types or models of research utilization: knowledge-driven, problem-solving, interactive, political, tactical, and enlightenment (4). The knowledge-driven and problem-solving models involve direct influence from research, starting with the research or the problem, respectively. The interactive and political models involve the selective retrieval of information from various sources, either to inform policy-makers’ decisions or as support for decisions already made. In the tactical model, the content is in fact irrelevant, as research is used as a tactic when policy-makers are required to perform some action. The enlightening model is one in which research gets used by “permeating” into policy. According to Weiss and others, the enlightening model is potentially the most important way in which social science research influences policy (4, 6, 7). This type of utilization has however been described as potentially the most difficult to measure (16).

Weiss’ theories have been elaborated by others (33, 34). These models essentially describe research utilization as either directly influencing the policy (instrumental use), changing the policy-makers’ understanding of the issue (conceptual use), or as a form of support (symbolic). Nutley and colleagues’ conceptual type of research utilization highlights the fact that the final decision need not follow directly from researchers’ recommendations (34). This is the basis for the definition of research utilization the author chose to use for the present research. Specifically the word “considered” was an important criterion for determining what would constitute “utilized”, in the present study. This definition highlights the fact that there are many important inputs to policy-

making, and does not undermine other actors' influence in the policy process, including civic engagement and political will. The definition one chooses will affect the interpretation of the factors influencing research utilization. In adopting this definition, it is important to recognize that the final outcome of a policy-decision may not be indicative of whether or not research has in fact been "utilized". As is described in the article, policy-makers may "utilize" research findings and yet in the end decide not to implement them, at least according to the definition the author has chosen. The stages model of research utilization provided by Knott and Wildavsky is useful for understanding the fact that using research is not a single event (35). This model looks at research findings as a process in and of itself. The process involves: transmission, cognition, reference, effort, influence, and application. The basic concept is that research findings must first reach policy-makers, be read and understood by them, and then considered amongst other options before efforts can be made to adopt and implement them.

Another way to view research utilization by policy-makers is through user-pull, producer-push, and interactive models (36, 37). The user-pull models focus on policy-makers actions to search, access and utilize research findings (pulling) as required by their needs and context. The producer-push models focus on researchers' promotion and dissemination (pushing) of their research towards policy-makers, while the interactive models deal with the combined efforts of both groups to involve the other (interacting) through means such as having policy-makers help in setting research agendas or the commissioning of studies by the policy-makers. It has been suggested that more research is needed that focuses on the user side of the interaction, since most studies measuring knowledge-transfer strategies, especially those focused on clinical decisions, have focused on producer push models (38). As described above, the present research did just that, by focusing on policy-makers perceptions of the situation.

Caplan and colleagues have provided some of the most important work regarding the problems research has had in influencing policy through their 'two-communities' theory of research utilization (7). Caplan's empirical research, comparing the 'two-communities' theory with the knowledge-specific and policy-maker constraint theories, indicated that such a theory could account for most of the reasons for the non-use of research findings (39). The essential concept behind the theory is that researchers and policy-makers have two competing worldviews, with different values and different interests. It has been the focus of many intervention strategies through the promotion of the idea that increasing the collaboration and personal contact between researchers and policy-makers will improve the uptake of research findings into the policy process.

Finally, the interfaces and receptor model, provided by Hanney and colleagues in their extensive review on the subject, integrates and builds on many of these models and theories (3). With the 'two-communities' theory in mind, it focuses on the policy-makers as receptors of information, as they ultimately make the final decisions. Networks and mechanisms must be created at appropriate interfaces between these receptors and the current stock of knowledge, allowing research findings to enter the complex policy process. By increasing the "permeability" of the interface, research findings are more likely to be utilized.

It is unclear to what extent these models can be applied to developing countries, as most of the above theory and literature is based on developed countries. Still, these models provide a good starting framework. Several of these models have already been used to understand how technical information is used in policy decision-making specifically for Africa (28). One can now also see how the present study focused on a specific point of view in this complex process with a particular interpretation of the meaning of research utilization. The findings that have emerged from the present study must be considered with regards to this particular positioning.

Previous findings on policy-makers' perceptions

Two systematic reviews have been carried out on this subject looking at the factors influencing the utilization of research findings by policy-makers. From these reviews, common concepts are emerging. The most common factors include: interactions and personal contact between researchers and policy-makers, timeliness and relevance of the research findings, presentation of the research findings (specifically, the inclusion of summaries with clear recommendations), trust issues between researchers and policy-makers, and power and budget struggles (15, 16).

When comparing the factors that emerged in the few studies from developing countries covered in the systematic reviews (40-43) with those from developed countries, many similarities are apparent, however some differences exist. As in developed countries, personal contact and interactions between researchers and policy-makers, timeliness and relevance of the research findings, and trust issues between the researchers and policy-makers were all common in developing countries. The inclusions of summaries with clear recommendations, and power and budget struggles also each emerged in one of the studies from developing countries. In contrast to the developed countries, political instability or high turnover rate of staff was also a common factor emerging in these countries. Policy-makers' negative attitudes towards research findings and their lack of skills and expertise emerged as important factors decreasing the prospects of research utilization in one of these developing countries (43).

In a more recent study involving four developing countries (44) – two of which were African – these negative attitudes towards research findings emerged as a factor in the interviews that took place with researchers. From the policy-makers' perspective, lack of collaboration and formal communication channels also emerged as factors, as did: access to information, lack of a central source of

research outputs, the quality of research, political influences and the format of the research findings.

Pharmacy and therapeutics committees in industrialized countries, and commissions that develop EMLs in developing countries make similar types of decisions. While not exactly the same concept, drug formularies serve many of the same purposes as EMLs: they are policies intended to guide the use of medicines. Important organizational bodies in the United States such as the Academy of Managed Care have promoted process guidelines for submissions to these committees for the specific purpose of improving the “timeliness, scope, quality, and relevance of the information available” so that the policy-makers can make more informed decisions (45). Drug formulary decisions have been widely studied with regard to evidence-based decisions, especially the use of pharmacoeconomics and cost-effectiveness analyses (see for example (46-48)). The use of these information sources has been regarded as non-systematic and varied (49). Examples of factors emerging from one study that focused on the policy-makers include: timeliness of studies, lack of information on potential cost offsets accruing to the hospital, lack of independent sponsorship, and inadequate expertise in economic evaluation (47). While these studies are interesting for comparison due to the similar types of decisions these policy-makers had to make, the contextual factors surrounding these groups are extremely different considering the differences in health care systems and economic situations. As a recent case study discovered while exploring the implementation of a randomized controlled trial on the use of magnesium sulphate to treat pre-eclampsia in twelve countries, there are often significant differences in the importance of factors inhibiting implementation of research findings across different nations and regions (50).

CHAPTER III – METHODOLOGY

Methods for studying the transfer of research to policy

Different research methods are useful for analyzing different issues surrounding the transfer of research to policy and practice. In the literature, several methods have been employed and recommended to answer questions concerning the utilization of research findings in policy decisions (3, 38). These methods include: in-depth interviews, document analyses, group discussions, direct observation and questionnaires.

In-depth interviews

Whether it is free flowing and unstructured, or structured and open-ended, by telephone or face-to-face, an in-depth interview is one of the most important and widely used methods in the qualitative tradition, and the most often used in this field of research (3, 15, 16). From the first systematic review examining health policy-makers utilization of research findings, it is clear that assessments of the use of research findings are largely qualitative in nature. Of the 24 relevant studies identified, interviews formed the bulk of the research, with questionnaires representing a smaller input (16). Interviews allow the researcher to explore in great depth the topics as seen from the viewpoint of the interviewee, serving to "obtain descriptions of the lived world of the interviewees with respect to interpretations of the meaning of the described phenomena" (51). It has also been suggested that interviewing is ideal for mapping out the information transfer processes and the networking between decision-makers and informants (3).

It is important to recognize that interviews do not measure behavior; interviews will not answer questions about what a person does. Instead, they tell us what people say, and more specifically what people say in the context of an interview. Asking policy-makers about their utilization of research findings cannot give a valid conclusion about the number of times policy-makers used research findings; instead it indicates the policy-maker's perceptions of using research.

This limitation does not imply that an interview serves little purpose or is invalid. Instead, it reminds us that interviews are measuring accounts as opposed to objective reports on behavior (52). If trying to understand how a person perceives a situation, the technique is highly useful. If trying to understand how a person actually acts in a situation, other methods should probably be employed. It also deserves mention that the information obtained from interviews will be limited by who is being interviewed. One cannot make assumptions about what researchers think about pushing their findings on policy-makers by asking this question to policy-makers. In fact, even the extent to which one can generalize the findings to other policy-makers is often unwarranted in qualitative work.

Document analyses

Using existing documentation to supply information on a research topic is often considered an efficient use of resources. In this field of research this method has been used on its own (see for example (50)), or in conjunction with interviews (3). Used in such a way it provides opportunities for validating responses and triangulating the data (53). Often used in case-study designs, documentary sources can supply useful background information on past decisions or the processes that lead to these decisions. Through minutes of meetings or submissions to groups of decision-makers one can actually see the information that has been exchanged between researchers and policy-makers. Document analyses may not however be able to explain to what extent such information was considered, if it all. In addition, it is possible that not all relevant documents are supplied or the information ever recorded, leading to selective retrieval of information and threatening the reliability of the data (52). That said, a document analysis is one of the most common methods used in this field of research (3), especially as a supplementary source of information, most probably because it helps explain and understand the often complex processes involved in health policy formation. The first systematic review on this topic in fact recommends that qualitative interviews and document analyses be used together to research this issue (16).

Group discussions

Another type of interview available to researchers in this field is the group discussion. This could be in the form of consensus panels, focus group discussions, natural group discussions, or community interviews (52). Group discussions are useful for accessing general opinions as opposed to the opinion of individuals. While not the most common method in this field, group interviews have been used, especially focus group discussion (9, 54, 55). Compared to one-on-one interviews, group discussions will give the researcher access to interaction between subjects, providing a more 'natural' setting for subjects (52), something that could be important when dealing with groups of policy-makers that collectively make policy-decisions. This interaction among respondents has also been shown to stimulate new ideas and thoughts and can therefore provide additional information to in-depth interviews (56). Selection of group members is essential for effective group interviews (57), and has been a limitation in studies in this field (see for example (9)). Threats to the validity of group interviews include social desirability, low levels of trust, face-politeness needs, researcher bias, and deception (56). These concerns must be taken into account when implementing this method.

Direct observation

This method can be an effective way of measuring policy-makers' actual use of research organizations as information resources (38). By observing decision-making in action, the researcher can gain access to the actual behavior of the subjects. It is also effective for analyzing how individuals or groups function in their natural setting. Observation helps the researcher to "understand what is going on in a particular context and to provide clues and pointers to other layers of reality" (58). It should be noted that the presence of the researcher in this particular setting might affect the way policy-makers act. In this particular study topic the involvement of a researcher at a meeting of decision-makers might not be desired, as decision-makers' self-presentation might influence them to act in a

way to impress the research team. When using this method, the researcher should be aware of this issue and not assume that what is necessarily observed when present is the same as when not present.

Questionnaires and surveys

Qualitative questionnaires allow a standard set of research questions to be asked of a sample of researchers or policy-makers. This technique allows for comparisons within and between subjects as well as the scaling and rating of the amount of utilization of research findings in decision-making. Unfortunately, such comparisons often require larger samples than might be available. When studying elites such as key policy-makers in government organizations, the likelihood of accessing enough subjects to obtain statistically relevant comparisons may therefore be unlikely. That said, several studies on this topic, most notably from North America and the UK, have been successful in using postal and telephone questionnaires, many with relatively high participation rates (13, 14, 59-61). These types of studies can provide highly reliable information about the way many policy-makers act towards research findings. These studies can however be limited in the new insights that are gained, and so complementary qualitative methods, such as inclusion of open-ended questions, is considered useful (59-61).

Using a qualitative design

As discussed above, the methodologies in health policy research can range from strictly qualitative in-depth interviews to quantitative surveys of policy-maker behaviour; from grounded theory, inductive exploratory research to the direct testing of theories and models of research utilization formulated by leading researchers in the field. In looking at previous knowledge utilization studies, it is apparent that this field of research is dominated by qualitative designs (3, 15, 16). Using qualitative research methods in health research has several advantages, including the ability to study interactions between different actors in the public health system (62). Despite this usefulness, it can cause sceptics of

these methods to question the validity, reliability, and generalizability of the findings – the 'science' behind the methods. Concerns often arise due to the fact that subjectivity often enters qualitative work – in fact it is sometimes a crucial aspect of the research. It is important nonetheless to demonstrate that the results of the study are valid and not merely anecdotal information recorded by the researcher. It has been argued that qualitative research must find an important balance between creativity and science and this can be done by sticking rigidly to the research procedures and maintaining an attitude of scepticism (63).

Reflexivity involves an awareness of one's preconceptions, and preferably sharing or declaring these preconceptions at the beginning of the study. It is an important aspect of qualitative research and is closely related to the validity of the study (64). Searching for deviant cases to the emerging theories is another important tool for validation (52). Triangulation, or "the combination of two or more theories, data sources, methods, or investigators in the study of a single phenomenon" (65), is often used to improve validity. When the same findings come from more than one source, there is increased likelihood that the information is valid. Researchers may also want to use respondent validation; giving feedback to the respondents to cross-check the data obtained (52).

Qualitative research often discusses using exploratory methods, and so it may be asked how reliable the work is; how likely is it that the same findings would be found if performed by a different researcher? This reliability can be improved by sticking to protocol guidelines, and by being systematic and transparent in all stages of the research. This includes audio recording interviews, "carefully" transcribing these recordings, using standardized methods for field-notes, and presenting in-depth extracts of the data in the final report (58). Having two researchers simultaneously analyze the data is also useful.

Qualitative research does not usually focus on generalization or discovering information that can be directly applied to a larger population or different

populations. Instead, it can be used as a way of sensitizing readers to new thoughts or concepts or to perform what has been called “conceptual generalization” (52). That is, the concepts or types of relationships that emerge can often be transferred, while specific facts cannot. The extent to which these concepts and relationships are transferred is highly dependent on the particular nature of the study. It is therefore important to provide appropriate contextual factors to the reader to allow him or her determine transferability to other settings (64). All these points must be taken into consideration when implementing the research protocol and throughout analysis and interpretation of the findings.

Study design

The present research implemented a qualitative case study design using a phenomenological approach to the analysis. The study did not attempt to test any of the models or theories of research utilization discussed above. Questions such as “how often” or “how many times” researchers used research findings were not specifically studied. The research did not attempt to explicitly measure in which situations policy-makers utilized research findings and in which situations they did not; the study did not measure actual behavior. Instead, it aimed to inductively explore the phenomenon of research utilization as lived and experienced by health policy-makers. Qualitative research is “ideal for questions that require an answer about understanding participants’ views, or for questions that address the meaning given to phenomena” (52). Since the main purpose of this research was to identify policy-makers’ perceptions of the factors influencing their utilization of research findings in the decision-making process, choosing qualitative techniques was appropriate. Case studies provide an excellent opportunity to generate detailed information about a selected case or “bounded system” (66, 67) – in this instance: the selection and updating of Mali’s EML. As mentioned above, there is a need for studies taken from the user’s point of view, and it has been suggested that the best way to do this would be through case studies as they could give a better appreciation of “*how* research knowledge is used” (italics in original (38)). By focusing on a specific health policy, participants

in this study had the opportunity to concretely discuss their experiences in the policy-making process.

Different qualitative designs use different theoretical approaches to analyze their data. Strauss and Corbin's grounded theory is ideal for analytically developing theories "grounded" in the field (63), and is probably the most common in the literature. The author chose to use a phenomenological approach based on the procedure described by Giorgi (68) to analyze the present research. A phenomenological approach is ideal for understanding the essence of experiences about a phenomenon (69). This approach therefore seemed appropriate, as this study's objective was to discover the essence of policy-makers' experiences with the utilization of research findings in the selection of the medicines for the national EML. By exploring their perceived reality of the policy process, it was possible to determine the essence of the factors influencing their utilization of research findings. It should also be stated that the systematic and specific procedure for analyzing the data described in Giorgi's analysis appealed to the author.

Data collection and study population

The author traveled to Mali to implement the research protocol. Three separate methods were used in the study design. The majority of the data was collected from nineteen in-depth, semi-structured interviews. Key informants were chosen from the national commission that selects and updates Mali's EML. This "purposeful sampling technique" results in "information-rich cases for in-depth study" (70). The principle investigator was provided with a list of all members of the commission. With the help of Diadié Maïga (DM) – an employee at the Direction of Pharmaceuticals and Medicines and third author in the article submission – members were chosen from the list, were contacted by telephone or in person and asked if they would be interested in participating. The order in which members were contacted from the list was primarily based on accessibility. Two members on the list had changed departments and could not be located,

and the few members not living in the Bamako area were not included (one commission member from outside the capital who was scheduled to visit Bamako was contacted, but was unavailable). One member of the commission who was available chose not to participate since the author did not have a written and signed letter of permission from the Ministry of Health. One health manager who was not on the commission was mentioned in initial interviews as having played a significant role in the decision-making process for this policy, and was recommended for participation. This person was also included in the study. Interviewing continued with available participants until theoretical saturation had been reached.

A natural group discussion is a specific form of group discussion with “people who know each other already” (52). One such discussion was used to supplement the information from the interviews. It also provided the opportunity to observe interactions between policy-makers and present preliminary results to the group members for feedback, obtaining respondent validation (52). Members were chosen from the policy-makers who were involved in the in-depth, semi-structured interviews. Following each interview, policy-makers were informed that they would potentially be asked to join this session. Many participants welcomed the idea, stating that they would appreciate some preliminary feedback on the results of the study. Knowing that many would not be able to attend due to conflicting schedules, all nineteen policy-makers who participated in the interviews were contacted twice by telephone and invited to participate in the discussion at a specific date and time. Only four individuals were able to participate in the group discussion. This included both senior staff and lower level civil servants. Both the author and DM facilitated the discussion.

A document analysis was also performed to validate comments made by the participants and to analyze actual sources of information accessed by the policy-makers. Several of these documents were provided by the Director of the Direction of Pharmaceuticals and Medicines and covered several updates of the

EML that had taken place over the last ten years. The individual who prepared the technical notes for the most recent updating of the commission also supplied relevant documents. In addition, together with the secretariat for the commission, the author went through and extracted all electronically stored documents saved by the commission on the Direction's database.

Details of the participants, the methods employed, and the way the data was handled is provided in the Methods section of the research article submission found in the next chapter. The interview guide is also provided in Appendix 1.

Ethical considerations

The protocol was to be presented to the ethical committee of the National Institute of Public Health, however upon arrival in Mali the author was informed that such a protocol did not require ethical approval. Regardless, individuals requested for interviews were given an informed consent form (attached as Appendix 2). They were informed of the main purpose of the study and what was required of them if they chose to participate. They were told that any information they provided would remain anonymous and confidential and that they could withdraw at any time without penalty. During transcription, points of reference that might identify the subject were removed and replaced with terms and identifiers that would preserve the anonymity of the subject. Interview transcripts, audio-recordings and interview notes remain with the author in a secure location only accessible to the author and co-investigators.

Analysis

All interviews and the group discussion were analyzed based on Giorgi's phenomenological approach (68). The steps for the analysis are highlighted in the research article, however they are presented here in greater depth:

1. The author went through and read all of the interview transcripts, notes taken during the interviews, and summaries made from the interviews not recorded. This was done to gain an overall impression of the research.

2. The author then went through all textual data from the interviews and identified all comments that appeared significant to the research and provided some meaning to the issue of utilizing research findings in the policy process. These significant statements were extracted from the text. Giorgi refers to these meaning units as constituents, highlighting that they are “differentiating a part in such a way that one is mindful of the whole.” (71). Using the Giorgi approach, counting the number of times similar statements occurs is not necessary, so redundancies were eliminated. The remaining meaning units were then translated into English by the author.

3. The translated meaning units were then compared with each other and the particular context of research utilization in policy-making. The meaning units were then expounded. This resulted in a set of abstractions or concepts that each revealed something about the process of utilizing research findings in policy-making. Both the author and a second investigator (the author’s supervisor, AF) each independently performed this task, followed by a discussion and consensus.

4. These concepts were then categorized and summarized into factors influencing the utilization of research findings as perceived by policy-makers. The author and AF also both independently performed this step. This was followed by discussion and consensus, after which the author returned to the extracted significant statements to ensure a good fit with the final factors.

The analysis of the natural group discussion followed a similar process. In the initial stage of gaining an overall impression, the observations made during the discussion of interactions between participants were taken into consideration. AF

did not participate in the majority of the analysis of the discussion, but did participate in the final stage, examining how the meaning units fit with the emerged factors.

Throughout the analysis various issues were brought up between the author and the second investigator, and conflicting views were discussed until consensus was reached. The sharing of preconceived notions was an essential part of this process. This critical reflection process is often referred to as bracketing and the bracketed ideas are referred to as epochs. This is a fundamental component in phenomenological research and allows the researcher to separate him/herself from the data.

The factors that emerged from this process are provided in the article submission found in the next chapter. After the factors had emerged from the data, they were compared and analysed against those found in previous studies of research utilization. These factors were also analyzed with respect to previous theories of research utilization, outlined above. The Discussion section in the article submission examines these comparisons.

CHAPTER IV – RESEARCH ARTICLE

Factors influencing the utilization of research findings by health policy-makers in a developing country: a case study of Mali's essential medicines list

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Abstract

Background

Research findings are increasingly being recognized as an important input in the formation of health policy. There is concern that research findings are not being utilized by health policy-makers to the extent that they could be. The factors influencing the utilization of various types of research by health policy-makers are beginning to emerge in the literature, however there is still little known about these factors in developing countries. The object of this study was to explore these factors by examining the implementation of a pharmaceutical policy common in developing countries; an essential medicines list.

Methods

A case study of the selection and updating of Mali's national essential medicines list was undertaken using qualitative methods. In-depth semi-structured interviews and a natural group discussion were held with national policy-makers, most specifically members of the national commission that selects and updates the country's list. The resulting text was analyzed using a phenomenological approach. A document analysis was also performed.

Results

Several factors emerged from the textual data that appear to be influencing the utilization of health research findings for these policy-makers. These factors include: access to information, relevance of the research, use of research perceived as a time consuming process, trust in the research, authority of those who presented their view, competency in research methods, priority of research in the policy process, and accountability.

Conclusions

Improving the transfer of research to policy will require effort on the part of researchers, policy-makers, and third parties. This will include: collaboration between researchers and policy-makers, increased production and dissemination of relevant and useful research, and continued and improved technical support from networks and multi-national organizations. Policy-makers from developing countries will then be better equipped to make informed decisions concerning their health policy issues.

Background

Most health researchers and those who fund health research would like to believe that the work they produce and support is influencing practice and policy and consequently leading to actual improvements in health care delivery. The study of research's influence on policy has had a long and rich background, from early work on the utilization of social science knowledge in government and public policy [1, 2], to more recent inquiries into the utilization of systematic reviews by policy-makers [3]. While the various models of policy-processes that have emerged in this field demonstrate that there are many ways in which research may be influencing policy [4, 5], it is widely recognized that the level of research utilization by policy-makers is lower than it could be [6]. The body of literature examining the factors influencing the utilization of research findings by policy-makers is increasing. From the two systematic reviews on the subject, common factors are emerging such as: interactions and personal contact between researchers and policy-makers, timeliness and relevance of the research findings, the inclusion of summaries with clear recommendations, mistrust between researchers and policy-makers, and power and budget struggles [3, 7]. Most of these findings are however based on studies from industrialized countries, and thus more research is needed into the factors that affect the linkage between research and policy in developing countries. With their limited resources these countries have much to gain from well-informed health policies [8].

The present research focused on one specific health policy: Mali's national essential medicines list (EML). In 1975 the World Health Organization (WHO) introduced the global concept of essential medicines with the first model EML introduced two years

later. Updates every two years have lead to the current 14th model list [9]. This reference document is usually used as a starting point for a national list, however each country requires additional information from monitoring and research for its specific health situation [10]. Like many developing countries, the West African country of Mali has a national EML. The Malian list does contain several medicines not present on the WHO model list, including an extra section for "improved traditional medicines." The country's official criteria for the selection of medicines for the list at the time of this study included: harmlessness, efficacy, relevance to the disease pattern, availability on the international market, and cost-effectiveness [11]. Since research findings have much to contribute to these criteria, the factors influencing their utilization, as perceived by policy-makers, were examined.

Methods

A qualitative case study approach was used for the present research. By focusing on a specific health policy, participants had the opportunity to concretely discuss their experiences in the policy-making process. After presenting the protocol to the National Institute of Public Health Research in Mali, the principle investigator was informed that written approval from the ethical committee was not necessary.

Participants

A purposive sampling technique was used by selecting key informants from the national commission that selects and updates Mali's national EML. The commission is composed of various Ministry of Health staff including health program managers, technical advisors, pharmacists, as well as local medical practitioners considered experts in their

field and technical advisors from the WHO and the European Union. One health manager who was not on the commission was mentioned in initial interviews as having played a significant role in the decision-making process for this policy, and was recommended for participation. This person was also included in the study. One member of the commission who was available chose not to participate since the interviewer did not have a signed letter from the Ministry of Health. A total of nineteen policy-makers (17 men and 2 women) took part. While there were 33 members on the commission, data saturation had been reached and so further interviewing was deemed unnecessary [12].

Data collection

The principle investigator (MA) conducted 19 in-depth, semi-structured interviews in French (33-89 minutes), between September and December 2005. The interview guide (see Additional file 1: Interview guide) was largely based on the draft interview schedule for assessing research utilization in policy-making provided by Hanney and colleagues as an additional file in their review of research utilization [6]. The topics discussed included: key informants and policy-makers in the policy-process, perceived importance of research findings in the decision-making process, forms of communication found to be useful, different ways research can be used, how well equipped the commission was in absorbing research findings, specific aspects of research that made it useful, presentation/format of research findings, the inclusion of traditional medicines on the list, barriers and facilitators to research utilization, and policy-makers' recommendations of how to increase their utilization of research findings.

A natural group discussion, defined as a group interview with "people who know each other already" [12] was also conducted (55 minutes). All 19 interviewees were invited knowing that many would not attend. Four individuals participated in the group discussion. MA gave a short presentation of the research and discussed the preliminary findings. Participants were asked to comment and a group discussion of key topics followed, with MA and DM facilitating. A document analysis was also performed. These documents covered several updates of the EML that have taken place over the last 10 years. They included the technical notes used by the commission, the documents used to prepare these notes, minutes from meetings, a critical analysis of the country's EML, a synthesis of the decisions made, copies of emails sent to and received from contacts abroad, Internet printouts, and various other relevant documents.

All but four of the interviews and the natural group discussion were recorded and transcribed by MA, who also took in-depth notes throughout each session. For those that were not recorded – at the requests of the interviewees – MA went over the in-depth notes and produced a detailed summary the same day as the session.

Analysis

All interviews were analyzed based on Giorgi's phenomenological approach [13]. The analysis followed the following steps: (i) going over all the textual data to gain an overall impression, by MA; (ii) identifying all comments that appeared significant to the research, extracting these meaning units and translating them into English, by MA; (iii) independent abstracting of the meaning units by MA and AF, followed by discussion and consensus; (iv) independent categorization and summarization of abstractions into factors

influencing the utilization of research findings as perceived by policy-makers, by MA and AF, followed by discussion and consensus; and finally (v) returning to the extracted text to ensure a good fit with the final factors, by MA. The analysis of the group discussion followed a similar process, however AF only participated in step (v). The document analysis was used to validate statements made in the interviews and to examine the information presented to the commission. Throughout the analysis preconceptions were shared and critically reflected on between the investigators.

Results

The factors that emerged from the interviews and group discussion are presented here. The embedded quotations were translated from French by MA and are included here for illustrative purposes.

Access to information

"The big ticket, at least in the case of Mali, and certainly the case for most African countries where we have problems with quality human resources and regular access to scientific information is the means to allow these people to keep themselves permanently informed."

Access to information was discussed in great depth, often accompanied by the statement "*we do not have the means*". While the Internet and various online resources were mentioned as useful in improving access to research, many of the policy-makers are still not connected and those who are have limited, if any, access to paid sites. Even at the

local level it was perceived that the transfer of information from research institutions to policy-makers is poor.

Limited capacity in accessing research findings was also stated as hindering its use. If a policy-maker has extra staff or is a supervisor of students who can search, gather, and compile the information, research findings are more likely to get used. The availability of key texts that supply such information was also seen as facilitating the utilization of research findings. In addition, the more contacts available to policy-makers – be they local experts or international organizations abroad – the greater access policy-makers felt they had to research findings.

Language was discussed as well. Mali's official language is French and while policy-makers agreed that "*the scientific language*" could largely be understood even without a solid grasp of English, many also stated that this was a problem. "*It is a serious handicap, serious.*" Policy-makers depend greatly on information available to them in French, and this was felt to be limiting. *"If I understood English… I am sure that I could do so much more for everyone."*

Relevance of research findings

It was stated in the group discussion that most research that is produced is irrelevant to policy-making. Researchers were described as *"doing activities to survive,"* and not necessarily to answer questions that need answering. It was proposed that collaboration between researchers and policy-makers could allow policy-makers to give some input into the research process.

Time consuming process

When discussing the presentation of research findings, interviewees indicated that a lengthy report or publication would not be read, and recommended that researchers provide short and concise documents. In fact, policy-makers stated that research utilization is already a lengthy and time-consuming process. Even if research is considered important, it still requires a significant amount of time to search, locate, access and review the relevant literature. *"It demands sacrifice."*

Trust in the research

Policy-makers want information they can trust. Those who were able to commission research found this to be important in allowing them to utilize the findings. This was not only because it improved the relevance of the research, but also because it increased how much the policy-makers trusted the research. As one policy-maker metaphorically stated: *"If I told you, behind that door there is a cup of tea with sugar and then I give you a cup of tea with sugar here. Which tea can you appreciate? What is outside is not bad, but what is in my hand, that, I can defend."*

While no particular form of presentation was stated as being more useful than another, policy-makers indicated that reports should be short (discussed above), and that they would like sections dedicated to methodologies and references. These are considered necessary for determining the quality of the research and therefore whether or not it can be trusted. Policy-makers indicated that their confidence in journals that publish research findings is also relevant. *"If it's in the Lancet or the New England Journal of Medicine, or Science, well, right away we jump on it."* Similarly, research that is supplied by a

trusted international organization is more likely to get used. *"If [the research] comes from the WHO, we know it isn't just taken from anywhere… we have confidence in the source."*

Authority of those who present their view

Some interviewees recognized that there is often an uncritical reliance on specialists. Comments made by respected individuals or those deemed extremely knowledgeable in the subject area are highly influential. *"We are often not critical. As a decision-maker we should be going into greater depth… a specialist comes in and we simply say, we're listening… and we write it down. There is no way to contradict, or at least construct contradictory information vis-à-vis the specialist."* This could result in either a decrease or an increase in research utilization. For example, it was stated that a respected professor was useful as leverage in promoting research findings to other members of the commission. At the same time, respected individuals might not be basing their recommendations on research. One policy-maker stated that cultural factors might be at play here; as a "*verbal society*" many policy-makers prefer verbal reports to documentation, and place more importance on information that is provided to them by individuals who are highly respected, than documents from a removed source.

Competency in research methods

Some policy-makers were involved in research studies or programs. Having researchers act as policy-makers was seen as a facilitator to research utilization, and not only because they can provide research findings or act as leverage, but also because they are able to provide a *"veritable training in research methods"*. Such training was considered

important in improving other policy-makers' competencies in research methods and their ability to understand research presented. While most felt that the commission members were highly qualified, several agreed that more training in research methods would make it easier and further motivate them to utilize research findings. *"There are always nuances in scientific research findings… in order to adapt research findings to make an applicable decision, and certainly when it comes to medicines, I believe the commission members must have a level of qualification sufficiently high in order to effectively exploit the conclusions."* However, one policy-maker who participated in such a training session, claimed to have gained little from the experience. Still others stated that if training is to be provided, incentives to continue working as a low-salaried civil servant must also be included. It was also brought up that increased competency in research methods would not only improve policy-makers' ability to understand the research, but it would also increase the importance they place on research and their motivation to use it.

Priority/importance of research in making the policy

When asked about the importance of research findings in the decision-making process, policy-makers all stated that, while research is important, other information sources often take precedence. Influence on the policy from higher and lower levels in the health care system, such as political will or demands from patients and clinicians tend to be prioritized over research findings.

On the other hand, several policy-makers discussed the fact that this particular policy is highly technical and they could not understand how one could not use research in the decision-making process. *"This is above all else a technical job, scientific. Its basis is*

science." The extent to which policy-makers value research findings in the policy process will influence how much it is utilized.

Accountability

There was some confusion over whose role it is to look up information. Medical professionals and specialists on the commission felt that the technicians in the Ministry of Health were in the best position to access and compile research findings for consideration, while some of these individuals felt that specialists should be supplying relevant findings from their field. Having a specific person or group of persons delegated to search and compile relevant research findings for the policy question at hand was perceived to be extremely helpful. "*You cannot place the responsibility on each person. If you do that it is not going to get done. You have to have a specific group whose job it is to get the information."*

Discussion

By analyzing the selection and updating of Mali's EML, this case study discovered several factors that influence the utilization of research findings by health policy-makers in a developing country. Like most studies in this field, this research used qualitative methods with the majority of the data coming from in-depth interviews [6, 7, 14]. Qualitative methods were chosen as they are "ideal for questions that require an answer about understanding participants' views" [12]. In using such methods, concerns about the validity of the results can arise. It is important to recognize that this study did not measure policy-makers' actual behavior, nor did it measure objective factors that influence their utilization of research findings. Instead, the findings represent policy-

makers' *perceptions* of these factors. In addition, this study did not take into account researchers' perceptions of these issues, as has been explored elsewhere [15-19].

By using three separate data acquisition methods, the validity of the findings was improved [20]. In addition to supplementing the information from the in-depth interviews, the natural group discussion provided an opportunity to give feedback to participants, allowing for respondent validation [12]. The selection and number of group members is important for effective group discussions [21], but was a limitation in this study. The results of the document analysis helped to validate participants' statements regarding sources and documents that were accessed. This analysis is limited however because it not known how much consideration, if any, such documents were allotted. The reliability of the results was improved through the use of independent investigators in several stages of the data analysis [22]. There are limitations in the extent to which we can generalize the findings of this study to other policy-makers and other developing countries, due to the exploratory nature of this study and the fact that it examined only one aspect of policy-making in one particular setting.

Two factors emerged from this study that are unique in the literature: the authority of those who present their view and the issue of accountability. These issues may be due to the specific nature of these policy-makers or their cultural setting, and so it is unclear to what extent these factors would be important in other settings. Several of the factors emerging from this study are common in the literature, including: relevance of research findings, trust in the research, and competency or skills of the policy-makers [3, 7].

Training policy-makers in research methods and sensitizing them to the usefulness of research findings in the policy process has also been recommended in previous studies [18, 23, 24]. Access to information, an important factor in this study, also emerged as a barrier to research utilization in a recent study involving four developing countries – two of which were African [15]. This study also indicated that the lack of value policy-makers placed on research findings was inhibiting its uptake. These negative attitudes towards research have also emerged as a barrier to research utilization in a study conducted in Mexico by Trostle and colleagues [18]. The present study seems to support this finding, and at the same time indicates that if research is considered important in the policy process it may also act as a facilitator to its utilization.

The presentation format of research findings has been mentioned in the literature as a potential facilitator of research utilization, for example by including summaries with clear recommendations [18]. In developed countries, this has been studied further, analyzing whether a specific format such as the "1:3:25" format (1-page take-home messages; 3-page executive summary; 25-page report) would facilitate the utilization of research findings [3]. Policy-makers in the present study did not believe that a specific format would affect whether or not they would use the research findings. The general consensus was that the report should be short, while supplying enough information to allow them to evaluate the quality of the research (by including the methodology and references).

The relative importance of research findings in the policy-process is a complex issue. For example: Mali is one of the few countries in Africa with traditional medicines on its

EML. In discussing one of these 'improved traditional medicines," one policy-maker mentioned having knowledge of, and considering, a study that had concluded that the medicine in question, while somewhat effective, was not the most effective. For that policy-maker, political will and community values were more important in the final decision. While the authors might not necessarily agree with the decision made, there is potentially nothing wrong with policies that do not follow research recommendations, as long as the research is considered. According to the conceptual approach to the definition of "research utilization" from Nutley and colleagues' adapted from Weiss, research that affects policy-makers understanding of a situation – even if the final decision does not follow directly from researchers' recommendations – is still being utilized [25]. Other influences such as local values and needs are recognized as important inputs into policy [4]. It is, after all, policy-makers who make policy, not researchers. In this example then, even though research was considered less important, it was still used in the policy process. If several factors are working together however, the utilization of research is likely not to occur at all. If using research findings does not take precedence and is already perceived as a time-consuming task in a country where capacity to access this information is low, and no one is quite sure who is responsible to get the information, then chances are the research will not be read or considered, let alone influence the decisions of the policy-maker.

Policy-makers' belief that searching, accessing and reviewing research findings is highly time consuming is perhaps a good argument for the increased production, promotion and dissemination of systematic reviews. Systematic reviews are increasingly recognized as

offering many advantages to the target audience [26], including the fact that they lead to a more efficient use of time [3]. No policy-makers mentioned having utilized information from systematic reviews, and most seemed unaware of their existence. Organizations such as the Cochrane Collaboration and the National Institute for Health and Clinical Excellence of the UK are currently leading the way in providing systematic reviews for medical practice. Studies have begun looking at how to improve their usefulness for health care managers and policy makers [3]. Interestingly, the Essential Medicines Department of the WHO actually re-introduced amodiaquine in the treatment of malaria following the publication of a systematic review from the Cochrane Collaboration indicating its safety and effectiveness compared with chloroquine [27]. Much work is still needed before systematic reviews are utilized in common practice in the formulation of policy at national levels, especially in developing countries.

Policy-makers in the present study stated that it was extremely helpful having trusted networks such as multi-national organizations supply information relevant to their decision-making. The fact that the WHO initiated the EML policy and supplied the commission with a model list was felt by one policy-maker to be the main reason why most of the medicines on the national EML were chosen based on evidence. These multi-national organizations can play an important role as knowledge brokers in helping policy-makers in developing countries make informed-decisions through continued and increased technical support [28, 29].

Perhaps the most prevalent theory discussed in the literature on this topic is the “two-

communities theory" developed by Caplan and colleagues. It highlights the fact that health researchers and policy-makers have two competing world views [2]. Increased collaboration and personal contact between researchers and policy-makers have been proposed and studied as solutions to the problems related this issue [30]. While these concepts were discussed in the interviews, the authors agreed that they did not emerge as factors *per se*. They were seen as indirect influences. Increased collaboration and personal contact between researchers and policy-makers could lead to increased access to information, improve policy-makers' trust in the research, enhance their understanding of, and competency in, research methods, and allow them to influence the research and make it more relevant to their own needs. This last point, while seemingly good for policy-makers, can pose potential problems to the objectivity and quality of research produced [7, 31].

With the limited number of studies from developing countries on this topic, further research seems necessary. The factors emerging from this study, including those that are not common in the literature, warrant further investigation and should be considered in the planning of strategies to bridge the gap between research findings and policy-making. How best to advocate the critical evaluation of all information sources, and the delegation of the specific task to search for research findings, as suggested by the policy-makers, remains unresolved. Different approaches to analyzing these issues will be important for future research. The present study analyzed the utilization of research in implementing the details of a policy – the selection of specific medicines for an EML – considered an important stage of influence in policy-formulation [4]. The types of factors influencing

the utilization of research findings likely differs in other levels of policy-making – for example the decision to have an EML in the first place. Getting an overall analysis of all levels of policy-formulation will be important for future research. Finally, it will be important to continue examining the effectiveness of strategies used to improve the uptake of research findings, such as case studies of collaborative research projects between researchers and policy-makers and analyses of the use of knowledge brokers in bridging these two communities.

Conclusions

In order to determine the factors influencing policy makers' utilization of research findings in a developing country, this qualitative case study examined health policy-makers' experiences in the selection and updating of Mali's EML. Due to the nature of the methods used, there are limitations to how far these factors can be generalized to other settings or other health policies. That said, many of the factors that emerged in this research have been found in similar studies in the literature. These factors support the issues related to the two-communities theory common in the literature, and highlight the importance of bridging these communities in order to improve the uptake of research findings.

Improving the transfer of research to policy will require effort on the part of policy-makers, the research community, and third parties. Policy-makers are likely to increase their utilization of research findings if their competency in research methods is improved and the importance they place on research findings in the policy-making process is increased. Providing these policy-makers with information they feel they can trust is also

essential. Researchers can also improve the uptake of their research by making efforts to investigate policy-relevant issues. Increased collaboration between researchers and policy-makers and continued and improved technical support from various networks and multi-national organizations will put policy-makers in a better position to make more informed decisions so that the best health policies may be implemented in settings where the population potentially has the most to gain.

Competing interests

DM works for the Direction of Pharmaceuticals and Medicines within the Ministry of Health in Mali and will be taking part in the next updating of the Malian EML.

Authors' contributions

MA conceived of the study, participated in its design, collected the data, performed the analysis, and wrote the initial draft of the manuscript. AF participated in the conception and design of the study, offered technical support to the principle investigator during implementation, contributed to the analysis and helped prepare the draft manuscript. DM contributed to the acquisition of data, and made critical comments on the draft manuscript. All authors read and approved the final manuscript.

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References

1. Weiss CH: **Using social research in public policy making**. Lexington, Mass.: Lexington Books; 1977.

2. Caplan N, Morrison A, Stambaugh RJ: **The use of social science knowledge in policy decisions at the national level: a report to respondents**. Ann Arbor: Institute for Social Research, University of Michigan; 1975.

3. Lavis J, Davies H, Oxman A, Denis JL, Golden-Biddle K, Ferlie E: **Towards systematic reviews that inform health care management and policy-making**. *J Health Serv Res Policy* 2005, **10 Suppl 1**:35-48.

4. Walt G: **Health Policy: An Introduction to Process and Power**. *London, Zed Books* 1994.

5. Weiss C: **The many meanings of research utilization**. *Public Adm Rev* 1979, **39**:426-431.

6. Hanney SR, Gonzalez-Block MA, Buxton MJ, Kogan M: **The utilisation of health research in policy-making: concepts, examples and methods of assessment**. *Health Res Policy Syst* 2003, **1**:2.

7. Innvaer S, Vist G, Trommald M, Oxman A: **Health policy-makers' perceptions of their use of evidence: a systematic review**. *J Health Serv Res Policy* 2002, **7**:239 - 244.

8. Garner P, Kale R, Dickson R, Dans T, Salinas R: **Getting research findings into practice: implementing research findings in developing countries**. *BMJ* 1998, **317**:531-535.

9. WHO: **WHO Model List (revised March 2005)**. In: *Essential Medicines.* Geneva; 2005.

10. Quick JD, Management Sciences for Health, World Health Organization . Action programme on essential drugs: **Managing drug supply: the selection,**

procurement, distribution, and use of pharmaceuticals, 2nd edn. West Hartford, Conn.: Kumarian Press; 1997.

11. **Orientations de la politique pharmaceutique nationale** [http://www.dirpharma.org]

12. Green J, Thorogood N: **Qualitative methods for health research**. London: Sage; 2004.

13. Giorgi A: **Sketch of a psychological phenomenological method**. In: *Phenomenology and psychological research : essays.* Edited by Giorgi A. Pittsburgh, Pa.: Duquesne University Press; 1985: 8-22.

14. Lavis J, Ross S, McLeod C, Gildiner A: **Measuring the impact of health research**. *J Health Serv Res Policy* 2003, **8**(3):165-170.

15. Hennink M, Stephenson R: **Using research to inform health policy: barriers and strategies in developing countries**. *J Health Commun* 2005, **10**(2):163-180.

16. Aaserud M, Lewin S, Innvaer S, Paulsen E, Dahlgren A, Trommald M, Duley L, Zwarenstein M, Oxman A: **Translating research into policy and practice in developing countries: a case study of magnesium sulphate for pre-eclampsia**. *BMC Health Services Research* 2005, **5**(1):68.

17. Moodley J, Jacobs M: **Research to action and policy: combating Vitamin A deficiencies in South Africa**. In: *Lessons in Research to Action and Policy - Case studies from seven countries.* Geneva: The Council of Health Research and Development (COHRED) Working Group on Research to Action and Policy; 2000: 54-66.

18. Trostle J, Bronfman M, Langer A: **How do researchers influence decision-makers? Case studies of Mexican policies**. *Health Policy Plan* 1999, **14**:103 - 114.

19. Gerhardus A, Kielmann K, Sanou A: **The use of research for decision-making in the health sector: the case of "shared care" in Burkina Faso**. In: *Lessons in Research to Action and Policy - Case studies from seven countries.* Geneva: The Council of Health Research and Development (COHRED) Working Group on Research to Action and Policy; 2000: 19-27.

20. Denzin NK: **The research act; a theoretical introduction to sociological methods**. Chicago,: Aldine Pub. Co.; 1970.

21. Knodel J: **The design and analysis of focus group studies. A practical approach**. In: *Successful focus groups: advancing the state of the art.* Edited by Morgan DL. Newbury Park, Calif.: Sage; 1993: 35-50.

22. Silverman D: **Interpreting qualitative data : methods for analysing talk, text and interaction**, 2nd edn. London: Sage; 2001.

23. Chunharas S: **Research to action and policy: the need for a new concept**. In: *Lessons in Research to Action and Policy - Case studies from seven countries.* Geneva: The Council on Health Research for Development (COHRED) Working Group on Research to Action and Policy; 2000: 1-8.

24. Sauerborn R, Nitayarumphong S, Gerhardus A: **Strategies to enhance the use of health systems research for health sector reform**. *Trop Med Int Health* 1999, **4**:827-835.

25. Nutley S, Walter I, Davies HTO: **From Knowing to Doing: A Framework for Understanding the Evidence-into-Practice Agenda**. *Evaluation* 2003, **9**(2):125-148.

26. Mulrow CD: **Rationale for systematic reviews**. In: *Systematic Reviews.* Edited by Chalmers I, Altman DG. London: BMJ Publishing Group; 1995: 1-8.

27. Volmink J, Siegfried N, Robertson K, Gulmezoglu AM: **Research synthesis and dissemination as a bridge to knowledge management: the Cochrane Collaboration**. *Bull World Health Organ* 2004, **82**(10):778-783.

28. Lavis JN, Robertson D, Woodside JM, McLeod CB, Abelson J, Knowledge Transfer Study G: **How can research organizations more effectively transfer research knowledge to decision makers?** *Milbank Q* 2003, **81**:221-248.

29. **Bridging the "Know-Do" Gap, Meeting on Knowledge Translation in Global Health**. Geneva: World Health Organization; 2006.

30. Ross S, Lavis J, Rodriguez C, Woodside J, Denis JL: **Partnership experiences: involving decision-makers in the research process**. *J Health Serv Res Policy* 2003, **8 Suppl 2**:26-34.

31. Polanyi M: **The Republic of Science - its political and economic theory**. *Minerva* 1962, **1**:54-73.

CHAPTER V – COMMENTS AND CONCLUSIONS

Several issues and concepts warrant further discussion and elaboration, which could not be undertaken in the research article due to the limitations in space dictated by scientific journals. These issues will now be addressed.

Diversions from the protocol

In all fieldwork, situations arise, circumstances change, issues previously unconsidered by the researcher are illuminated, and diversions or adjustments to the protocol must be made. Such was the case in this study as well. The interview guide changed from its original version in the protocol upon arrival in Mali after a review of relevant documentation (the interview guide found in Appendix 1 is the updated guide actually used in the field). As the interview process progressed, the interviews were also further adjusted to elaborate on issues discussed in previous interviews. This is in fact normal if not essential in qualitative interviewing, where such a strategy allows emerging concepts to be further explored (72).

This research originally had the ambitious goal of interviewing researchers or "information providers," in addition to the policy-makers. This would have contributed to the data by providing information about how policy-makers interact with providers of research findings and it would have potentially allowed for an exploration of researchers' perceptions of disseminating or 'pushing' research findings to the policy-makers. During the exploration and mapping out of the information transfer process, where other key policy-makers and informants were identified, very few specific individuals were highlighted as "information providers". For this reason, as well as time, budget, and feasibility issues, these interviews were not carried out, and the focus remained on the policy-makers' perceptions.

As mentioned above, while the natural group discussion was helpful in supplementing information and allowed for observation of interactions between policy-makers, the limited number of individuals who were able to participate in the natural group discussion, and the fact that the author was unable to control for which policy-makers would participate, were weaknesses of this study. It would also have been advantageous to have more than one group discussion in order to better to triangulate the data, however this was unfortunately impossible. Organizing group interviews in this context was, as anticipated, extremely difficult due to the scheduling of policy-makers. For this reason, this study had originally intended on performing some direct observation of the updating of the country's EML, as policymakers would all be available in one setting. This would have provided direct insight into how the selection committee functions as a group, and allowed the author to observe first-hand the decision-making process. Mali usually updates its EML towards the end of December every two years, and organizers of the commission welcomed the idea when it was presented by the author. Unfortunately, although the EML was due to be updated, the scheduling of the commission meetings were delayed, and the process had not yet begun when the author was required to leave the field at the end of December. Direct observation was therefore not possible. The author recommends that such a component of a study be considered in future research, as involvement in the process would be highly enlightening. Researchers would need to be aware that the policy-makers might act differently due to the presence of the researcher, in attempts to present themselves in a good light. Such a presentation would however also be interesting to observe, as it would give insights into policy-makers' perceptions of what the research team felt they *should* do.

It should also be stated that the author originally went into the field with the idea of using grounded theory as an approach to analyzing the data. Early in the data collection it became clear that this was not the approach the author was in fact using. Upon further exploration of analytical approaches, it was decided that the

analysis would use phenomenology as its foundation, and the analysis proceeded as described above.

Uncommon factors

Of those factors that were not common in the systematic reviews, some have begun to emerge in the limited literature on this topic in developing countries and were mentioned above. The factor of “access to information” that appeared in this study has emerged in the recent study from four developing countries (44). This concept encompasses many contextual factors influencing the utilization of research findings – in the present study this includes: capacity, electronic access, and language issues. This factor is likely highly related to financial issues, and therefore may be a concept only prevalent in economically strained settings, explaining its lack of commonality in the systematic reviews.

Policy-makers’ perceptions that utilizing research findings was a time consuming task is perhaps not surprising, however it is interesting that this was perceived as a factor influencing the utilization of research findings. This was a difficult concept to grasp during the analysis of the data since “time-constraints” emerged in interviews, however it was unclear to what extent it might decrease the prospects for utilizing research findings, as all decision-making is usually constrained within some time-framework. Upon further analysis, it became clear that utilizing research findings was perceived as highly time-consuming. The important thing to recognize with this factor is that it may exacerbate other factors already in place. If policy-makers have limited access to research findings with limited capacity to search and compile the information, time constraints may dictate that policy-makers will not be able to utilize research findings, even if they are highly valued and considered extremely important in the policy-making process.

The factor corresponding to the uncritical reliance on individuals who held certain positions of authority is unique in the literature, however it does relate to other

important concepts. Trust is fundamental here. Just as the confidence in journals and international organizations increased the prospects of utilizing their research findings, the confidence given to persons in authority increased the likelihood of using their information. As identified by many of the policy-makers, the ability to critically assess information presented regardless of one's expertise in the subject is essential.

Accountability is an issue in all decision-making. It is in fact related to why the author chose to conduct the present study: if researchers and research funders are to be accountable for the massive amounts of financial resources they spend on health research, they may need to justify such spending by improving the transfer of information from research to policy (3). As the World Bank states: "accountability requires clear rules and expectations, transparent information to monitor performance, and incentives and enforcement mechanisms that reward success and address failure" (73). It is highly likely that the first two points of this definition – clear rules and expectations – may be the principle reasons why accountability is a factor influencing the utilization of research findings. As was presented in the Results section of the research article, if it is unclear whose responsibility it is to provide this information, it increases the likelihood of it not being provided at all. For group policy-making, specifically delegating the task of searching, accessing, reviewing, and providing research findings to a particular group or individual may be an effective way of dealing with such a problem. How to advocate such a strategy is less clear and warrants further investigation.

Implications

When analyzing the findings from this study, it is important to take into consideration the particular positioning of this research and the policy-making process it examined. The type of policy-maker, the particular stage of the policy-process, and the definition of utilization used in this study are all relevant to the inferences one can make from the research findings. With that in mind, it is of interest to see how the findings from this research relate to the various models

and theories described in the background section of this thesis. The incrementalist models are recognizable in these findings since there were several inputs that played critical roles in the final decisions for these policy-makers. Similarly, the network models are equally relevant, since the various relationships policy-makers held with various information providers influenced both the access to research findings and the trust placed on the information provided. Kingdon's streams model is perhaps less relevant considering the fact that this model focuses on policy agenda-setting, and the present research focused more on the specific decisions required for the implementation of a policy.

As stated in the article, several of the factors from this study also correspond well with the two-communities theory of research utilization, namely: trust in the research, competency in research methods, and relevance of research findings. Collaboration and increased personal contact between researchers and policy-makers is by far the most often discussed strategy for dealing with this issue and has been discussed in the article presented here. An important difficulty with this recommendation has been mentioned in previous discussions. While perhaps not entirely relevant to the particular context of the current study, this issue still deserves mention, and has been eloquently stated by Innvaer in the first systematic review on this topic:

> "If what is required for research to be used is that researchers do what the policy-maker wants them to do, then research may fail to fulfill one of its most important functions, namely to be objective, reliable and unbiased" (16).

Increasing the collaboration between researchers and policy-makers may therefore get research into policy-making, however it will be important for researchers to preserve a certain amount of autonomy if these essential functions are to be upheld. In addition, this systematic review indicates that increasing the personal contact between researchers and policy-makers may

also increase the inappropriate utilization of research, in the symbolic, selective sense of the word. The interfaces and receptors approach to looking at research utilization has been described as being able to address this particular “paradox” (3). The model suggests improving the permeability of the interface between available knowledge and the policy-making process through several avenues, including the development of links with researchers on a long-term basis, and training of policy-makers in the value and need for systematic reviews. Such techniques could therefore improve policy-makers’ appropriate use and analysis of available evidence. This research arguably supports such an approach. The findings suggest that the benefits of collaboration and personal contact may be as much due to access, trust, and competency as they are to the relevance of research findings. The involvement of multi-national organizations, such as the WHO was therefore recommended. These organizations could aid in increasing the access to research findings and the improvement of policy-makers’ expertise and skills. In fact, WHO has recently launched an initiative in several developing countries in Asia and Africa with the aim of “providing a bridge between research and policy”: the Evidence Informed Policy Network (EVIPNet) (74).

As stated in the opening words to this thesis, the most often recommendation made in research studies is for more research. The reader should therefore have been expecting the recommendation for further research when it appeared in the research article above. There is in fact a need for a better understanding of how to improve the organization of research efforts in order to increase the likelihood of it influencing policy and contributing to improvements in health care delivery (3). Continued research on this issue in a developing country context is therefore important. It will be necessary to look at the problem from various angles in the policy process, examining different types of utilization, and the various strategies used to improve the situation. In doing so, a solid knowledge base can be built, allowing appropriate and effective strategies to be made to improve the transfer of research to policy, bridging the know-do gap.

Conclusion

Research findings are increasingly recognized as an important and critical input for the formation of health policy, yet it has become evident that these findings are not being utilized to the extent that they could be. Policy-making and the influence research findings can have on the decisions involved is a complex process. There are several angles one can therefore take to study the various problems involved in the know-do gap. With a limited number of studies focusing on developing countries, there is a great need for further investigation into what factors are influencing the utilization of research findings by health policy-makers in such a setting. This qualitative case study therefore examined the updating and selection of the medicines on Mali's national EML in order to address this question. Given the particular positioning the author chose to take in the policy-process, the potential methodologies that can be used, including those found most often in the literature, have been compared and contrasted for their strengths and weaknesses in answering this research question.

Using Giorgi's phenomenological approach to analyze the data, the author has revealed several factors influencing the utilization of research findings that emerged from the interviews and natural group discussion held with policy-makers in Mali. These factors include: policy-makers' access to information, the relevance of research findings, the perception that utilizing research findings is time-consuming, the trust policy-makers place on research, the authority of those who present their view, policy-makers' competency in research methods, the relative importance or priority of research findings compared with other sources of information in the policy-process, and the uncertainty of who is responsible or accountable for accessing, locating, and providing research findings to address the policy-decisions.

These findings seem to support relevant models and theories of research utilization emerging in the literature. The author also provides similar recommendations to those given in past studies addressing this topic. There are

several strategies for addressing these factors, including collaborative projects between researchers and policy-makers, involvement of multi-national organizations, and the production, dissemination and focus on relevant, useful and appropriate research findings, such as those found in systematic reviews. Increased efforts on the part of all relevant players in the research to policy process can ensure that such strategies are both implemented and evaluated. Through these means, policy-makers in countries such as Mali will be better equipped and informed to allow them to address the many complicated and difficult health care problems afflicting their citizens.

REFERENCES

1. Walt G. Health Policy: An Introduction to Process and Power. London, Zed Books. 1994.
2. Evidence-based medicine. A new approach to teaching the practice of medicine. Evidence-Based Medicine Working Group. JAMA. 1992 Nov 4; 268(17): 2420-5.
3. Hanney SR, Gonzalez-Block MA, Buxton MJ, Kogan M. The utilisation of health research in policy-making: concepts, examples and methods of assessment. Health Res Policy Syst. 2003; 1:2.
4. Weiss C. The many meanings of research utilization. Public Adm Rev. 1979; 39: 426-31.
5. Bridging the "Know-Do" Gap, Meeting on Knowledge Translation in Global Health. Geneva: World Health Organization; 2006. Report No.: WHO/EIP/KMS/2006.2.
6. Weiss CH. Using social research in public policy making. Lexington, Mass.: Lexington Books; 1977.
7. Caplan N, Morrison A, Stambaugh RJ. The use of social science knowledge in policy decisions at the national level: a report to respondents. Ann Arbor: Institute for Social Research, University of Michigan; 1975.
8. Drummond M, Weatherly H. Implementing the findings of health technology assessments. Int J Technol Assess Health Care. 2000; 16: 1-12.
9. Hoffmann C, Stoykova BA, Nixon J, Glanville JM, Misso K, Drummond MF. Do health-care decision makers find economic evaluations useful? The findings of focus group research in UK health authorities. Value Health. 2002 Mar-Apr; 5(2): 71-8.
10. Haynes RB. What kind of evidence is it that Evidence-Based Medicine advocates want health care providers and consumers to pay attention to? BMC Health Serv Res. 2002; 2(1): 3.
11. Oxman A, Guyatt G, Cook D, Montori V. Summarizing the evidence. In: Guyatt G, Rennie D, editors. Users' guides to the medical literature: essentials of evidence-based clinical practice. Chicago: AMA Press; 2002. p. 155-73.
12. Stevens KR. Systematic reviews: the heart of evidence-based practice. AACN Clin Issues. 2001 Nov; 12(4): 529-38.
13. Dobbins M, Cockerill R, Barnsley J. Factors affecting the utilization of systematic reviews. A study of public health decision makers. Int J Technol Assess Health Care. 2001 Spring; 17(2): 203-14.
14. Dobbins M, Cockerill R, Barnsley J, Ciliska D. Factors of the innovation, organization, environment, and individual that predict the influence five systematic reviews had on public health decisions. Int J Technol Assess Health Care. 2001 Fall; 17(4): 467-78.
15. Lavis J, Davies H, Oxman A, Denis JL, Golden-Biddle K, Ferlie E. Towards systematic reviews that inform health care management and policy-making. J Health Serv Res Policy. 2005 Jul; 10 Suppl 1: 35-48.
16. Innvaer S, Vist G, Trommald M, Oxman A. Health policy-makers' perceptions of their use of evidence: a systematic review. J Health Serv Res Policy. 2002; 7: 239-44.
17. Garner P, Kale R, Dickson R, Dans T, Salinas R. Getting research findings into practice: implementing research findings in developing countries. BMJ. 1998; 317:531-5.

18. WHO. WHO Model List (revised March 2005). Geneva; 2005 March. 14th edition.
19. World Health Organization. WHO medicines strategy: revised procedure for updating WHO's Model List of Essential Drugs. document EB109 2002 [cited 2006 May 5]; Available from: http://www.who.int/gb/
20. le Grand A, Hogerzeil HV, Haaijer-Ruskamp FM. Intervention research in rational use of drugs: a review. Health Policy Plan. 1999 Jun; 14(2): 89-102.
21. Quick JD, Management Sciences for Health, World Health Organization. Action programme on essential drugs. Managing drug supply: the selection, procurement, distribution, and use of pharmaceuticals. 2nd ed. West Hartford, Conn.: Kumarian Press; 1997.
22. Quick JD, Hogerzeil HV. Ten best readings in ... essential medicines. Health Policy Plan. 2003 Mar; 18(1): 119-21.
23. World Development Indicators database. World Bank Group; 2006.
24. WHO. WHO Statistical Information Systems (WHOSIS), Country Health Indicators, Mali. 2006 [cited 2006 May 1]; Available from: http://www3.who.int/whosis/country/indicators.cfm?country=mli
25. Ministère de la santé du Mali, Direction de la pharmacie et du médicament. Liste nationale des medicaments. [cited 2005 July 9]; Available from: http://www.dirpharma.org
26. Ministère de la santé du Mali, Direction de la pharmacie et du médicament. Orientations de la politique pharmaceutique nationale. [cited 2005 September 1]; Available from: http://www.dirpharma.org
27. Harrop M. Power and policy in liberal democracies. Cambridge: Cambridge University Press; 1992.
28. Porter RW, Hicks I. Knowledge Utilization and the Process of Policy Formation: Toward a Framework for Africa. 1995 [cited 2006 May 5]; Available from: http://sara.aed.org/publications/cross_cutting/knowledge_utilization/html/utilization.htm
29. Sutton R. The Policy Process: an overview. Working Paper 118. London: Overseas Development Institute; 1999.
30. Grindle MS, Thomas JW. Public choices and policy change: the political economy of reform in developing countries. Baltimore, Md.: Johns Hopkins University Press; 1991.
31. Lindblom C, Cohen D. Usable Knowledge: Social Science and Social Problem Solving. New Haven, Yale University Press. 1979.
32. Kingdon JW. Agendas, alternatives, and public policies. Boston: Little, Brown and Co.; 1984.
33. Lavis JN, Robertson D, Woodside JM, McLeod CB, Abelson J, Knowledge Transfer Study G. How can research organizations more effectively transfer research knowledge to decision makers? Milbank Q. 2003; 81: 221-48.
34. Nutley S, Walter I, Davies HTO. From Knowing to Doing: A Framework for Understanding the Evidence-into-Practice Agenda. Evaluation. 2003 April 1, 2003; 9(2): 125-48.
35. Knott J, Wildavsky A. If dissemination is the answer, what is the problem? Knowledge: Creation, Diffusion, Utilization. 1980; 1: 537-78.

36. Landry R, Amara N, Lamari M. Utilization of social science research knowledge in Canada. Research Policy. 2001; 30(2): 333-49.
37. Lavis JN, Ross SE, Hurley JE, Hohenadel JM, Stoddart GL, Woodward CA, et al. Examining the role of health services research in public policymaking. Milbank Q. 2002; 80: 125-54.
38. Lavis J, Ross S, McLeod C, Gildiner A. Measuring the impact of health research. J Health Serv Res Policy. 2003 Jul; 8(3): 165-70.
39. Caplan N. The Two-Communities Theory and Knowledge Utilisation. Amercian Behavioural Scientist. 1979; 22(3): 459-70.
40. Gerhardus A, Kielmann K, Sanou A. The use of research for decision-making in the health sector: the case of "shared care" in Burkina Faso. Geneva: The Council of Health Research and Development (COHRED) Working Group on Research to Action and Policy; 2000.
41. Hilderbrand M, Simon H, Hyder A. The role of research in child health policy and programs in Pakistan. Geneva: The Council of Health Research and Development (COHRED) Working Group on Research to Action and Policy; 2000.
42. Moodley J, Jacobs M. Research to action and policy: combating Vitamin A deficiencies in South Africa. Geneva: The Council of Health Research and Development (COHRED) Working Group on Research to Action and Policy; 2000.
43. Trostle J, Bronfman M, Langer A. How do researchers influence decision-makers? Case studies of Mexican policies. Health Policy Plan. 1999; 14: 103-14.
44. Hennink M, Stephenson R. Using research to inform health policy: barriers and strategies in developing countries. J Health Commun. 2005 Mar; 10(2): 163-80.
45. Fry RN, Avey SG, Sullivan SD. The Academy of Managed Care Pharmacy Format for Formulary Submissions: an evolving standard--a Foundation for Managed Care Pharmacy Task Force report. Value Health. 2003 Sep-Oct; 6(5): 505-21.
46. Luce BR, Lyles CA, Rentz AM. The view from managed care pharmacy. Health Aff (Millwood). 1996 Winter; 15(4): 168-76.
47. Sloan FA, Whetten-Goldstein K, Wilson A. Hospital pharmacy decisions, cost containment, and the use of cost-effectiveness analysis. Soc Sci Med. 1997 Aug; 45(4): 523-33.
48. Titlow K, Randel L, Clancy CM, Emanuel EJ. Drug coverage decisions: the role of dollars and values. Health Aff (Millwood). 2000 Mar-Apr; 19(2): 240-7.
49. Neumann PJ. Evidence-based and value-based formulary guidelines. Health Aff (Millwood). 2004 Jan-Feb; 23(1): 124-34.
50. Aaserud M, Lewin S, Innvaer S, Paulsen E, Dahlgren A, Trommald M, et al. Translating research into policy and practice in developing countries: a case study of magnesium sulphate for pre-eclampsia. BMC Health Services Research. 2005; 5(1): 68.
51. Kvale S. Interviews: an introduction to qualitative research interviewing. Thousand Oaks, Calif.: Sage; 1996.
52. Green J, Thorogood N. Qualitative methods for health research. London: Sage; 2004.
53. Denzin NK. The research act; a theoretical introduction to sociological methods. Chicago,: Aldine Pub. Co.; 1970.

54. Eyles J, Stoddart GL, Lavis J, Pranger T, Molyneaux-Smith L, McMullan C. Making resource shifts supportive of the broad determinants of health: the P.E.I. experience. Hamilton: McMaster Institute of Environment and Health; 2000.
55. Petticrew M, Whitehead M, Macintyre SJ, Graham H, Egan M. Evidence for public health policy on inequalities: 1: the reality according to policymakers. J Epidemiol Community Health. 2004 Oct; 58(10): 811-6.
56. Albrecht TL, Johnson GM, Walther JB. Understanding Communication Processes in Focus Groups. In: Morgan DL, editor. Successful focus groups : advancing the state of the art. Newbury Park, Calif.: Sage; 1993. p. 51-63.
57. Knodel J. The design and analysis of focus group studies. A practical approach. In: Morgan DL, editor. Successful focus groups : advancing the state of the art. Newbury Park, Calif.: Sage; 1993. p. 35-50.
58. Silverman D. Interpreting qualitative data: methods for analysing talk, text and interaction. 2nd ed. London: Sage; 2001.
59. Davies E, Littlejohns P. Views of Directors of Public Health about NICE Appraisal Guidance: results of a postal survey. National Institute for Clinical Excellence. J Public Health Med. 2002 Dec; 24(4): 319-25.
60. Sorian R, Baugh T. Power of information: closing the gap between research and policy. Health Aff (Millwood). 2002 Mar-Apr; 21(2): 264-73.
61. Weatherly H, Drummond M, Smith D. Using evidence in the development of local health policies. Some evidence from the United Kingdom. Int J Technol Assess Health Care. 2002 Fall; 18(4): 771-81.
62. Baum F. Researching public health: behind the qualitative-quantitative methodological debate. Soc Sci Med. 1995 Feb;40(4):459-68.
63. Strauss AL, Corbin JM. Basics of qualitative research: grounded theory procedures and techniques. Newbury Park, Calif.: Sage; 1990.
64. Malterud K. Qualitative research: standards, challenges, and guidelines. Lancet. 2001 Aug 11; 358(9280): 483-8.
65. Kimchi J, Polivka B, Stevenson JS. Triangulation: operational definitions. Nurs Res. 1991 Nov-Dec; 40(6): 364-6.
66. Hammersley M. What's wrong with ethnography? London; New York, NY: Routledge; 1992.
67. Stake RE. The art of case study research. Thousand Oaks, Calif.: Sage; 1995.
68. Giorgi A. Sketch of a psychological phenomenological method. In: Giorgi A, editor. Phenomenology and psychological research: essays. Pittsburgh, Pa.: Duquesne University Press; 1985. p. 8-22.
69. Creswell JW. Qualitative inquiry and research design: choosing among five traditions. Thousand Oaks, Calif.: Sage; 1998.
70. Patton MQ, Patton MQ. Qualitative evaluation and research methods. 2nd ed. Newbury Park, Calif.: Sage Publications; 1990.
71. Giorgi A. Convergence and divergence of qualitative methods in psychology. In: Giorgi A, Fischer WF, Murray C, editors. Duquesne studies in phenomenological psychology: Volume II. Pittsburgh, PA: Duquesne University Press; 1975. p. 72-9.
72. Brewer JD. Ethnography. Buckingham: Open University Press; 2000.
73. Millennium Development Goals: Strengthening Mutual Accountability, Aid, Trade and Governance. Washington DC: The World Bank; 2006.

74. Hamid M, Bustamante-Manaog T, Truong VD, Akkhavong K, Fu H, Ma Y, et al. EVIPNet: translating the spirit of Mexico. Lancet. 2005 Nov 19; 366(9499): 1758-60.

APPENDIX 1: INTERVIEW GUIDE

(English version. Actual interviews were conducted in French.)

Section A: Context/introduction

1. Confirm the role of the interviewee in his/her decision-making status for the selection of Mali's essential medicines list (EML). To what extent? How many years?

Section B: The decision making process

1. Could you describe the process of selecting the medicines for the national list?

2. According to you, what is the purpose of an essential medicines list?

3. What do you think are the most important criteria to consider when selecting a drug for the EML? [Probe: safety, access, price, efficacy, pattern of prevalent diseases, current use in the country, single compound, generic available, availability on the international market]

Section C: The informants. Information mapping.

1. From whom do you take advice during the process of updating the essential medicines list?

2. Do you take advice from "non-experts" whose values you greatly trust?

3. Which other individuals, groups, or organizations are important? [Probe: ministers; legislature; officials; networks; professional groups; advocacy groups; academics/researchers; specific research centers; international organizations; industry; NGOs; political parties; religious leaders; mass media; the public]

4. Is there a situation when you would want to select a medicine that is not on the WHO essential medicines list? Example?

5. Is there a situation when you would not want to select a medicine that is on the WHO essential medicines list? Example?

6. To which ways of communicating or discussing the information with informants were you most receptive, or found most useful.

Section D: Importance of scientific research for making decisions

1. What type of information do you consider most important when considering the addition or removal of a medicine to/from the list?

2. How important do you consider scientific research when making decisions about which medicines to select for the National EML? [Probe: relative importance of experience compared to research]

3. How well equipped was the selections committee to absorb research findings? [Probes: levels of training that members had in research methods; the use of policy analysis; the willingness to participate in official committees of policy-makers and scientists; and the degree of contact built up with researchers].

Section E: Specific utilization of research

1. Can you think of an example of a particularly difficult decision that was made? (Probes: WHO vs Mali list; old list vs new list; traditional medicines)

2. Were you able to use research findings to help make that decision? If so, from which source? From whom? [Probes: national or international research;

systematic reviews; meta-analyses; Cochrane; national or international scientific literature; research reports; briefs of research findings produced by researchers; direct communication with individual researchers; attendance at seminars where research findings were presented; liaison with research centers; reports from official policy/science committees; briefs from research brokers/promoters/translators; briefs from policy advisers or officials; networks consisting of interest groups and other stakeholders; mass media; and dialogue with international agencies. Also Probe: informants mentioned in Section C]

3. Were there specific features of this research that made it useful? [Probe: type of information it provided, quality, timeliness]

4. Can you think of an example where more research information was needed?

5. Can you think of an example where the research presented was not useful to help you make your decision?

6. Were there reasons why research did not influence the decision to the extent that it could have done?

7. What factors do you believe could make policy-makers more receptive to research?

Section F: Research as support

1. Were the research findings useful in supporting the decisions, to help communicate the policy or to generate support for it in terms of financial resources, political commitment, public opinion?

2. Were the findings drawn upon in any speech, article, interview, report etc given to anyone at a higher level to support the decisions?

Section G: Unique to the list: traditional medicines - if not discussed above

1. Why did you decide to look into traditional medicines?

2. Were there any particular research findings that were used for deciding to choose these 7 medicines? Please give examples.

3. Who were the informants that led to the addition of these medicines to the list?

4. Why are these medicines in a separate category of their own instead of being placed in their respective treatment categories?

5. Why are the improved traditional medicines on the essential medicines list but not in the therapeutic guidelines?

Section H: Conclusion

1. Do you have anything else you might like to add, specifically related to the main question here: what are the factors influencing policy-makers' utilization of research findings?

Section I: Document checklist

1. Terms of reference for committee or guidelines for the selection proceedings

2. Minutes from meetings with the selections committees

3. Submissions to the committee

4. Any other material used by selections committee

APPENDIX 2: INFORMED CONSENT

Interviewee ID: _____

Health Research Utilization Study
Informed Consent Form

The purpose of this study is to examine the factors affecting the use of research findings by health policy decision makers in the selection of a developing country's essential medicines list (EML). If you participate in the study you will be involved in an in-depth interview, lasting no more than an hour. The interviewer will ask you questions concerning the decision making processes for selecting medicines for Mali's EML.

Your participation in this study is completely voluntary. Choosing to participate or not participate in the study will not have any negative repercussions. You are completely free to decline any part of the research, to choose not to answer any questions posed by the interviewer, to ask to have the audio recording turned off, or to withdraw from the study at any time without penalty. Both the audio recording used in the interview and the information obtained from the interview in the form of transcribed texts or notes will remain completely confidential. Names and/or any other identifiers that arise from the research interview will be altered in order to preserve your anonymity.

If you have any questions, please do not hesitate to ask the Principle Investigator, Michael Albert. You may also contact his supervisor, Dr. Atle Fretheim of the Norwegian Knowledge Centre for Health at (+47) 24 16 3296 or at atle.fretheim@nokc.no before or after participating in the study.

Signature: _____ Date: _____

Name (please print): _____